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IS 3501 (1966): Pickles [FAD 10: Processed Fruits and Vegetable Products]

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SPECIFICATION FOR PICKLES

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110 002

Gr 3 *May* 1966

Indian Standard

SPECIFICATION FOR PICKLES

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AMENDMENT NO. 1 MAY 1996
TO
IS 3501 : 1966 SPECIFICATION FOR PICKLES

(*Page* 3, *clause* 0.4) — Insert the following new clause after 0.4 and renumber the subsequent clause:

'**0.5** A scheme for labelling environment friendly products known as ECO-Mark has been introduced at the instance of the Ministry of Environment and Forests (MEF), Government of India. The ECO-Mark shall be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolution No. 71 dated 20 February 1991 and Resolution No. 425 dated 28 October 1992 published in the Gazette of the Government of India. For a product to be eligible for marking with the ECO-Mark it shall also carry the Standard Mark of BIS for quality besides meeting additional environment friendly (EF) requirements. The environment friendly requirements for pickles are, therefore, included through Amendment No. 1 to this standard.

This amendment is based on the Gazette Notification No. 624 (E) dated 6 September 1995 for Labelling Beverages, Infant Foods, Processed Fruits and Vegetable Products as environment friendly, published in the Gazette of the Government of India.'

(*Page* 5, *clause* 5.5.4) — Insert the following new matter after 5.5.4:

"**5.6 Additional Requirements for ECO-Mark**

5.6.1 *General Requirements*

5.6.1.1 The product shall conform to the requirements prescribed under 5.1 to 5.5.4.

5.6.1.2 The manufacturer shall produce the consent clearance as per the provisions of *Water (PCP) Act*, 1974, *Water (PCP) Cess Act*, 1977 and *Air (PCP) Act*, 1981 along with the authorization if required under *Environment (Protection) Act*, 1986 and the Rules made thereunder to the Bureau of Indian Standards while applying for the ECO-Mark and the product shall also be in accordance with the *Prevention of Food Adulteration Act*, 1954 and the Rules made thereunder. Additionally, FPO 1955 (Fruit Product Order) framed under *Essential Commodities Act*, 1955, *Standards of Weights and Measures Act*, 1977 requirements wherever applicable has to be complied with.

5.6.1.3 The product/packaging may also display in brief the criteria based on which the product has been labelled environment friendly.

5.6.1.4 The material used for product/packing shall be recyclable or biodegradable.

5.6.1.5 The date of manufacture and date of expiry shall be declared on the product/package by the manufacturer.

5.6.1.6 The product shall be microbiologically safe when tested as per IS 5403 : 1969 'Method for yeast and mould count of foodstuffs' and IS 5887 (Part 5) : 1976 'Methods for detection of bacteria responsible for food poisoning : Part 5 Isolation, identification and enumeration of *Vibrio Cholerae* and *Vibrio Parahaemolyticus* (*first revision*)' and shall be free from bacterial and fungal toxins.

5.6.1.7 The pesticide residues, if any in the product shall not exceed the limit as prescribed in *PFA Act*, 1954 and the Rules made thereunder.

5.6.1.8 The product/package or leaflet accompanying it may display instructions of proper use, storage and transport (including refrigeration temperature compliance) so as to maximize the product performance, safety and minimize wastage.

5.6.2 *Specific Requirements*

5.6.2.1 The product shall not contain any of the heavy metal contaminants in excess of the quantities prescribed in Table 1.''

(*Page* 6, *clause* **6.2**) — Insert the following new clause after **6.2** :

'6.3 ECO-Mark

The product may also be marked with the ECO-Mark, the details of which may be obtained from the Bureau of Indian Standards.'

(FAD 10)

Indian Standard
SPECIFICATION FOR PICKLES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 3 April 1966, after the draft finalized by the Fruits and Vegetables Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Pickles occupy an important place among the traditional foods processed in India, and there is good scope for the development of their external as well as internal trade. It is, however, necessary to ensure their quality by exercising strict quality control which may be done on the basis of this Indian Standard.

0.3 This standard is one of a series of Indian Standards on processed fruits and vegetables.

0.4 In the preparation of this standard, due consideration has been given to the provisions of the *Prevention of Food Adulteration Act, 1954* and the Rules framed thereunder, and the Fruit Products Order, 1955. This standard is subject to the restrictions imposed under these, wherever applicable.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and methods of test for pickles.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

---

*Rules for rounding off numerical values (*revised*).

2.1 Absence of Defects — Freedom from extraneous materials, such as grit and other foreign matter.

2.2 Pickles — Fruits or vegetables preserved in common salt, vinegar, oil or citrus juices.

3. TYPES

3.1 Pickles shall be of the following three types:

Type 1 Pickles in vinegar;
Type 2 Pickles in citrus juice or brine; and
Type 3 Pickles in oil.

4. GRADES

4.1 Pickles shall be of two grades:

Grade 1, and
Grade 2.

5. REQUIREMENTS

5.1 General — Pickles shall be prepared from fresh or cured, clean and sound fruits or vegetables. The material used shall be free from insect damage or fungal attack. The substances that may be added to pickles are: spices, onions, ginger, garlic, salt, sugar, jaggery and acetic acid.

5.2 Extraneous Colouring Matter and Synthetic Sweetening Agents — The material shall be free from extraneous colouring matter and synthetic sweetening agents.

5.3 Preservatives — No preservatives other than benzoic acid shall be used. The benzoic acid content shall not exceed 250 parts per million when tested according to the method prescribed in Appendix A.

5.4 Covering Media — The covering media of the three types of pickles shall be as given below.

5.4.1 *Type 1* — vinegar of good quality.

5.4.2 *Type 2* — freshly prepared brine or citrus fruit juice.

5.4.3 *Type 3* — any edible vegetable oil.

5.5 Finished Product — The two grades of material, determined according to the method prescribed in Appendix B, shall have the following characteristics.

Grade 1 — The pickles shall possess a good, uniform colour and appearance; shall be practically free from defects; shall possess a good texture and normal characteristic taste and flavour, typical of the type; and shall score not less than 85 points.

Grade 2 — The pickles shall possess a good, uniform colour and appearance; shall be reasonably free from defects; shall possess a reasonably good texture and normal characteristic taste and flavour, typical of the type; and shall score not less than 75 points.

The maximum and minimum number of points to be scored by different factors shall be as below: Scoring shall be done according to the method prescribed in Appendix B.

	MAXIMUM	MINIMUM	
		Grade 1	*Grade 2*
Colour and texture	25	19	16
Taste and flavour	50	37	33
Absence of defects	25	19	16

5.5.1 *Colour and Texture*

Grade 1 — The units shall possess a good, practically uniform colour. The units shall possess a good texture, shall not be unduly hard or tough, and shall be free from development of softening to the extent that they break up during storage or transport.

Grade 2 — The units shall possess a good, reasonably uniform colour. The units shall possess a reasonably good texture, and shall be reasonably free from development of softening to the extent that they break up during storage or transport.

5.5.2 *Taste and Flavour*

Grade 1 — The units shall possess a pleasant aroma and flavour characteristic of the product. The units shall be devoid of any objectionable or off-taste, smell or odour.

Grade 2 — The units shall possess a pleasant aroma and flavour characteristic of the product. The units shall be reasonably free from objectionable or metallic or off-taste, smell or odour.

5.5.3 *Absence of Defects*

Grade 1 — The units shall be practically free from defects. The material shall be free from visible fungal growth.

Grade 2 — The units shall be reasonably free from defects. The material shall be reasonably free from visible fungal growth.

5.5.4 The material shall also conform to the requirements in Table 1.

TABLE 1 REQUIREMENTS FOR PICKLES

(*Clause* 5.5.4)

Sl No.	Type of Pickles	Characteristic	Requirement	Methods of Test (Ref to Cl No. of IS : 2860-1964*)
(1)	(2)	(3)	(4)	(5)
i)	Type 1, Type 2, and Type 3	Fluid portion, percent by weight of the net weight, *Max*	33·3	—
ii)	Type 1	Acidity, as acetic acid of fluid portion, percent by weight, *Max*	3·0	10
	Type 2	Acidity (for pickles in citrus juices), as anhydrous citric acid, percent by weight, *Min*	1·2	10
iii)	Type 2	Sodium chloride, percent by weight, *Max*	12	11
iv)	Type 1 to Type 3	Arsenic, ppm, *Max*	1·1	13
v)	Type 1 to Type 3	Lead, ppm, *Max*	2·5	14
vi)	Type 1 to Type 3	Copper, ppm, *Max*	30	15
vii)	Type 1 to Type 3	Zinc, ppm, *Max*	19	16
viii)	Type 1 to Type 3	Tin, ppm, *Max*	250	17

*Methods of sampling and test for processed fruits and vegetables.

6. PACKING AND MARKING

6.1 Packing — Pickles of Type 1 and Type 2 shall ordinarily be packed in glass containers or in wooden barrels or in such metal containers as may be found suitable. When metal containers are used, they shall be either internally plain or lacquered. Type 3 pickles shall be packed in glass containers or in lacquered cans. The lacquer used for lacquering the containers shall be acid resistant.

6.2 Marking — Each container shall be marked with the following particulars:

a) Name, type and grade of the material with the brand name, if any;
b) Name and address of the manufacturer;
c) Net weight of the contents;
d) Date of manufacture or code number indicating the date of manufacture, to be embossed;
e) List of additives, if used; and
f) Manufacturing licence number.

7. SAMPLING

7.1 The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in **3** of IS : 2860-1964*.

8. TESTS

8.1 The samples of pickles shall be tested for ascertaining conformity of the material to the requirements of this specification by the methods given in IS : 2860-1964*. Reference to the relevant clauses of IS : 2860-1964* is given in col 5 of Table 1.

APPENDIX A

(*Clause* 5.3)

DETERMINATION OF BENZOIC ACID

A-1. REAGENTS

A-1.1 Saturated Sodium Chloride Solution

A-1.2 Pulverized Sodium Chloride

A-1.3 Calcium Carbonate Solution — 1 : 3 solution of milk of lime.

A-1.4 Dilute Hydrochloric Acid — 1 : 3.

A-1.5 Chloroform

A-1.6 Ethyl Alcohol — made neutral with alkali using phenolphthalein as an indicator.

A-1.7 Phenolphthalein Indicator Solution — Prepared by dissolving 0·1 g in 100 ml of rectified spirit (*see* IS : 323-1959†).

A-1.8 Standard Sodium Hydroxide Solution — 0·05 N.

A-2. PROCEDURE

A-2.1 Weigh accurately about 150 g of the material in a suitable digestor and add to it about 300 ml of the saturated sodium chloride solution. Digest the material and then add 15 g of pulverized sodium chloride. Make the solution alkaline to litmus by adding required amount of milk of lime. Transfer the solution to a 500-ml volumetric flask and make up to volume with saturated solution of sodium chloride. Allow it to stand for at least two hours shaking frequently; centrifuge if necessary, and filter.

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*Methods of sampling and test for processed fruits and vegetables.

†Specification for rectified spirit (*revised*).

A-2.2 Pipette accurately 100 to 200 ml of the filtrate (**A-2.1**) into a separating funnel. Neutralize it to the litmus with hydrochloric acid and add 5 ml in excess. Extract with 70, 50, 40 and 30 ml of chloroform, shaking with a rotary motion to avoid an emulsion. If an emulsion forms, break it up with a glass rod, by drawing off into a second funnel and giving one or two sharp up-and-down shakes or by centrifuging. Avoid drawing off of the chloroform layer, thus obviating the washing of the chloroform extract.

A-2.3 Transfer the extract to a porcelain dish, rinse the container several times with a small quantity of chloroform, and evaporate at room temperature in a current of dry air. Alternately, transfer it into an Erlenmeyer flask and distill slowly to one-quarter of its volume. Transfer it to the dish, rinsing the flask with small amounts of chloroform and evaporate to dryness at room temperature in a current of dry air. Dry the residue overnight in a desiccator containing concentrated sulphuric acid.

A-2.4 Dissolve the residue in 30 to 50 ml of ethyl alcohol, and add 10 ml of water and one or two drops of phenolphthalein indicator solution. Titrate this solution with the standard sodium hydroxide solution and note the volume of sodium hydroxide.

A-3. CALCULATION

$$\text{Benzoic Acid, part per million} = 61\,000\,000 \times \frac{NV}{V_1 W}$$

where

N = normality of the standard sodium hydroxide solution;
V = volume of standard sodium hydroxide solution;
V_1 = volume of filtrate taken (**A-2.2**); and
W = weight in g of the material.

APPENDIX B

(*Clause* 5.5)

DETERMINATION OF THE GRADE OF THE PRODUCT

B-1. APPARATUS

B-1.1 White Porcelain Bowls — big enough to hold the contents of the container under examination.

B-1.2 Stainless Steel Spoons — Table spoons.

B-2. PROCEDURE

B-2.1 Panel of Judges — Grades of the product shall be judged by a panel of three to five judges. All the judges constituting a panel shall be conversant with the factors governing the quality of the product. The containers shall be opened and the contents poured separately into white porcelain bowls. Each judge shall independently examine the contents from each of the containers and indicate scores for different characteristics.

B-2.1.1 The judges shall consider the following characteristics: colour and texture; taste and flavour; and absence of defects.

B-2.2 System of Scoring — The variations within each factor are so described in Table 2 that the scores may be ascertained for each factor and expressed numerically. The relative importance of each factor has been expressed numerically on a scale of 100. Each judge shall indicate the score for the individual factors by the method described in Table 2, and record his observations in Score Sheet (*see* P 11).

B-2.2.1 The scores as number of points indicated by the judges for the contents of each container for the three factors (*see* **B-2.1.1**) shall be recorded in a tabular form in the Score Card (*see* P 12), and the average score calculated for each factor with overall average for each container entered in the appropriate column (*see* Table 2 and **B-2.3.2**).

B-2.3 Ascertaining the Grade

B-2.3.1 *Consistency Among Judges* — To ascertain the consistency of judgement among the judges, the total score indicated by each of them for the contents of the same container shall be calculated by adding up the scores for the various individual characteristics. If the difference between the maximum and minimum of the total score so obtained does not exceed ($K + 5$), where K is the number of judges, the scoring shall be deemed as consistent for the container under consideration. If the difference exceeds ($K + 5$), the score that is the farthest from its immediate neighbour (the scores being arranged in one order) shall be discarded and the consistency among the remaining judges shall be examined.

B-2.3.2 When the consistency (*see* **B-2-3.1**) is thus established, the overall average scores indicated by judges whose scoring has been found to be consistent, shall be calculated for each can. The average score for each of the individual characteristics shall also be calculated by taking into account the corresponding scores as given by the same judges for the contents of the same container.

TABLE 2 METHOD FOR GIVING SCORES FOR PICKLES

(*Clause* B-2.2)

Characteristic (1)	Description (2)	Maximum Number of Points (3)
Colour and texture	Good, practically uniform colour. Good texture, not unduly hard or tough; shall be free from development of softening.	25
	Slight variation in the shades of characteristic colour; texture tending to be tough but not very hard.	19
	Not very uniform, reasonably varying shades of characteristic colour; texture tough or soft to touch.	16
	Dull, non-uniform colour; very hard or soft broken units.	0
Taste and flavour	Pleasant aroma; taste characteristic of the product; free from any objectionable or off-taste smell or odour.	50
	A slight variation in the aroma; smell not very pleasant; taste bitter.	37
	Smell not characteristic of the product, but tolerable; aroma not pleasant and characteristic but acceptable; slight metallic taste.	33
	Very offensive smell, heavy metallic contamination, very bad and bitter taste.	0
Absence of defects	Free from defects, such as extraneous material and grit; free from visible fungal attack.	25
	One or two pieces of extraneous materials.	19
	Some extraneous material of such a nature which will not materially affect the quality; traces of mycelia.	16
	Gritty, heavy fungal infestation.	0

B-2.3.3 *Assignment of Grade* — In order to assign a grade for the contents of a container, the following procedure shall be adopted:

For Grade 1 — The score for each factor individually shall be not less than 75 percent of the maximum score obtainable, and the overall average scores shall be not less than 85 points.

For Grade 2 — The score for each factor individually shall be not less than 65 percent of the maximum score obtainable, and the overall average score shall be not less than 75 points.

SCORE SHEET FOR INDIVIDUAL JUDGE

Sample No. ....

Date of Sampling ....

DETAILS OF THE SAMPLE: a) Product .... b) Name of Manufacturer .... c) Type ....

d) Batch No. .... c) Date of Manufacture ....

Sample Cans

Factors	Score Points		1	2	3	4	5	6	7	8	9	10	
Colour and Texture	Grade 1	19 — 25											
	Grade 2	16 — 18											
Taste and Flavour	Grade 1	37 — 50											
	Grade 2	33 — 37											
Absence of Defects	Grade 1	19 — 25											
	Grade 2	16 — 18											

Signature of the Judge ....

Date ....

SCORE CARD

Sample No. ....

Date of Sampling ....

DETAILS OF THE SAMPLE CAN: a) Product .... b) Name of Manufacturer .... c) Type ....

d) Batch No. .... e) Date of Manufacture ....

Factor →	Colour and Texture					Taste and Flavour					Absence of Defects					Total Scores					Average Score for				Grade of the Can
Judge → Can Number ↓	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	Colour and Texture	Taste and Flavour	Absence of Defects	Total	

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